

**REMARKS/ARGUMENTS**

Claims 1-30 stand rejected in the outstanding Official Action. Claims 1, 3, 6-8, 11-13, 17-19, 21, 23, 26, 27 and 29 have been amended and newly written claims 31-33 offered for consideration. Accordingly, claims 1-33 remain in this application.

The Examiner's acceptance of Applicant's originally submitted formal drawings is very much appreciated. Additionally, the Examiner's acknowledgment of Applicant's claim for priority and receipt of the certified copy of the priority document is very much appreciated.

The Examiner's failure to have initialed and dated either of the PTO 1449 forms accompanying previously submitted Information Disclosure Statements is questioned. Although the Examiner, in a detailed discussion in the Official Action on pages 3 and 4, cites non-applicable legal precedent, the Examiner does not dispute that Applicant has fulfilled all requirements of the duty of disclosure in each of the Information Disclosure Statement submissions.

In the first Information Disclosure Statement filed February 20, 2004, Applicant included a copy of a UK Patent Office Search Report which cited the relevance of the five references. The prior art submitted on March 31, 2004 was not as a result of a foreign search and applicant has no knowledge of any references being more relevant than any other in this group.

Applicant has met all requirements for submission of known prior art and the Patent Office compliance of consideration of this art by initialing and dating and returning to the Applicant a copy of the PTO Forms 1449 is respectfully requested.

**Telephone Interview with SPE Manorama Padmanabhan July 26, 2006**

Applicant's undersigned representative conducted a telephone discussion with Supervisory Primary Examiner (SPE) Padmanabhan on July 26, 2006, and the Supervisory Primary Examiner admitted, notwithstanding the statements in the Official Action, she knew of no PTO rule or statute which allowed the Patent Office to avoid consideration of properly submitted prior art in the Information Disclosure Statements.

The SPE confirmed that there is no requirement that Applicant review the cited prior art and provide any "concise explanation," even though applicants are "encouraged" to do so, if possible, and if they are aware of references which have any greater degree of pertinence than other references. The Supervisor indicated that the Examiner would properly consider the submitted prior art and forward the requested initialed and dated PTO Forms 1449 in order to complete the record in this application.

The Examiner correctly notes an objection to the dependency of claims 19 and 29 on page 4 of the outstanding Official Action. Applicant has amended claims 19 and 29 to depend from claims 11 and 21, respectively, thereby obviating any further objection to these claims.

Claims 11-20 stand rejected under 35 USC §101 as allegedly being directed to non-statutory subject matter, with the Examiner taking the position that "a computer program product" is not statutory subject matter. Applicant's review of 35 USC §101 indicates that patentable inventions comprise "any new and useful process, machine, manufacture, or composition of matter . . . ." A "computer program product," to the extent that it modifies a computer into which the program has been loaded, is certainly a part of a "machine." Also, because it denotes a process by means of a series of instructions to a computer, it is a "process."

Thus, not only does a "computer program product" fall within two of the specifically recited statutory subject matters in §101, there is certainly no prohibition in §101 against a computer program product. While the Patent Office has a constantly changing mélange of informal rules about what it believes to be a statutory process and/or statutory product, there is ample support for use of the term "computer program product" in the preamble of claims issued by the U.S. Patent and Trademark Office. (For example, see U.S. Patent 6,836,860 which recites "a computer program product" in claim 1).

More recently, the Patent Office has begun attempting to require some "tangible result" with respect to any claims having to do with computers and/or computer programs. While this latest revision of Patent Office interpretation of statutory subject matter is also of doubtful validity (there being no mention of "tangible result" in either the statute or any judicial decisions regarding the statute), discussions between the undersigned and various Quality Assurance Specialists as the U.S. PTO has confirmed that currently the PTO grants as acceptable language the following phrase: "a computer program product comprising a computer readable storage medium comprising computer readable instructions that, when executed, cause a computer to . . . ." This language specifies a physical structure, i.e., the computer program product, which is comprised of a computer readable storage medium. The computer readable storage medium includes computer readable instructions that, when executed, cause the computer to control execution of a number of steps.

Independent claim 11 has been amended consistent with the above Patent Office advice regarding the claiming of a computer program product comprising a "computer readable storage medium." As a result, claim 11 and claims 12-20 directly or indirectly dependent thereon are

believed clearly directed to statutory subject matter and any further rejection under 35 USC §101 is respectfully traversed.

Claims 1-6, 9, 11-16, 19, 21-26 and 29 stand rejected under 35 USC §102 as being anticipated by Wilson ("Uniprocessor Garbage Collection Techniques"). In order to understand and appreciate the present invention and the Wilson reference, it is necessary for the Examiner to review Applicant's specification and the disclosed details of the background of the invention portion of the specification.

The present invention is concerned with memory recycling processes, popularly referred to as "garbage collection." Specifically, there are garbage collection algorithms which are precise (exact) or imprecise (conservative) in their manner of recycling memory. An imprecise or conservative garbage collector knows that a particular region of memory may contain a reference which could refer to a "live" variable, but can be fooled, for example, by a variable value which happens to coincide with a memory address. The imprecise garbage collector acts conservatively and does not treat as garbage anything which could be "live." Hence, as a result of the conservative approach, memory which actually could be reclaimed is left occupied.

A precise or exact garbage collector can distinguish between references and primitive types and is therefore able to "garbage collect" memory which only happens to look like a potentially live reference, but is in fact merely a primitive type for which the allocated memory could be recycled. However, the trade-off for precise garbage collection is complexity and such collection must rely on some kind of bookkeeping mechanism to keep track of the nature of all objects in memory. Once such bookkeeping selection is the use of "stack maps" created at the byte code verification stage, which are RAM intensive. Another known solution is "tagging"

each stack slot to indicate if that slot contains a reference or a non-reference value. This increases the space requirements of the stack and also slows down program execution, since at each operation both the relevant slot and the corresponding tag must be updated. Significantly more detail regarding precise and imprecise garbage collection can be found in the description of prior art portion of Applicant's specification between pages 2 and 6.

The Wilson citation is a garbage collection technique called "mark-sweep collection" which is also briefly discussed in Applicant's specification, page 4, lines 19-23 and acknowledged to be in the prior art. Wilson is literally a textbook example of the mark-sweep technique discussed therein. In order to support a rejection of Applicant's independent claims in view of the Wilson reference, it is incumbent upon the Examiner to establish where in the Wilson reference each of Applicant's claimed steps are located.

Applicant has made minor amendments in its independent claims to specify that the first memory management step comprises identifying at least one data item root occurring in the course of execution. The subsequent method step ("determininga correlation") has been amended to specify that the correlation involves correlation between reference values corresponding to the data item root and identifying at least one data item reachable from the data item root. Support for the identification of data item roots is found on page 11, lines 19-20 of the specification and is disclosed in Figure 1. Support for the "determining a correlation" step is found in the specification at page 12, line 1, along with the discussion of Figure 2 on page 12, line 22 through page 13, line 3.

A number of minor amendments to Applicant's dependent claims consistent with the amendments to the independent claims have also been made. Applicant has also removed the

alternative language "one or more" and instead substituted "at least one" where appropriate in order to avoid "alternative claiming."

Applicant's detailed review of the Wilson and other cited references of record does not disclose Applicant's claim 1 where after suspension of an actual execution path of the processing task, at least one data item root is dynamically identified, and the roots are accessible to the processing task at the execution point corresponding to the suspension of the execution path. Should the Examiner contend Wilson still anticipates, under §102, or renders obvious, under §103, Applicant's method claims including the "identifying" and "determining a correlation" steps, he is respectfully requested to point out precisely where such method steps are disclosed in the Wilson reference. Barring any such disclosure, any further rejection of Applicant's independent claims and claims dependent thereon either under §102 or §103 based on the Wilson reference is respectfully traversed.

Claims 10, 20 and 30 stand rejected under 35 USC §103 as unpatentable over Wilson. Inasmuch as these claims ultimately depend from Applicant's independent claims 1, 11 and 21 (as amended above), the above comments distinguishing independent claims 1, 11 and 21 from the Wilson reference are herein incorporated by reference. Any further rejection of claims 10, 20 and 30 under 35 USC §103 over the Wilson reference is respectfully traversed.

Claims 7, 8, 17, 18, 27 and 28 stand rejected under 35 USC §103 as unpatentable over Wilson in view of Hosoya ("Garbage Collection via Dynamic Type Inference"). Inasmuch as claims 7, 8, 17, 18, 27 and 28 ultimately depend from Applicant's independent claims 1, 11 and 21, the above comments distinguishing these independent claims from the Wilson reference are herein incorporated by reference. The Examiner makes no allegation that the Hosoya reference

supplies the claimed method steps or logic steps of the claimed invention which are missing in the Wilson reference. Accordingly, even if Wilson and Hosoya were combined, they would not disclose the subject matter of Applicant's independent claims 1, 11 and 21, let alone claims 7, 8, 17, 18, 27 and 28 dependent thereon, respectively.

Moreover, the Examiner has failed to provide any "reason" or "motivation" for combining the Wilson and Hosoya references. The burden is on the Patent Office to establish how or why one of ordinary skill would be motivated, and merely setting forth conclusory statements as to the combination "being obvious" is insufficient. Accordingly, any further rejection of claims 7, 8, 17, 18, 27 and 28 over the Wilson/Hosoya combination is respectfully traversed.

Applicant has also submitted newly claims 31-33 generally directed to the feature of claims 7, 17 and 27, but rewritten in independent form. Entry and consideration of newly written claims 31-33 is respectfully requested.

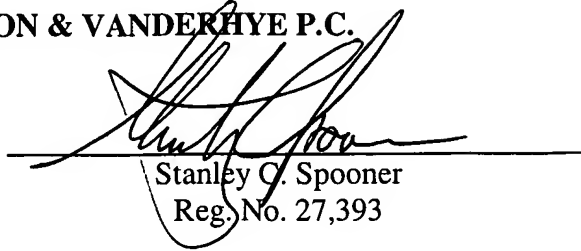
Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-33 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact Applicant's undersigned representative.

NEVILL  
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Respectfully submitted,

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